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**CLARIFICATION TO THE APPROVED
DOCUMENT CHANGE REQUEST FOR THE
FEASIBILITY STUDY WORK PLAN**

10/28/93

**DOE-0136-94
DOE-FN/EPA
9
LETTER**



Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

483 4

OCT 28 1993

DOE-0136-94

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - 5HRE-8J
77 W. Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Graham E. Mitchell, Project Manager
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402-2086

Dear Mr. Saric and Mr. Mitchell:

**CLARIFICATION TO THE APPROVED DOCUMENT CHANGE REQUEST FOR THE FEASIBILITY
STUDY WORK PLAN**

Reference: Letter James A. Saric to Jack R. Craig, "Approval of the OU 4
Feasibility Study Document Change Request," dated July 28, 1993

In the referenced letter, the United States Environmental Protection Agency (U.S. EPA) approved Document Change Request (DCR) Number RI/FS:93:002A, which amended the work plan for the Feasibility Study to allow for a qualitative comparison of alternatives for each Operable Unit (OU). In addition to the approval of the DCR, the U.S. EPA identified the following inconsistency and requested its clarification:

"...The text states that state and community acceptance will be addressed in the record of decision, but Table 3-1 still includes sections for state and community acceptance..."

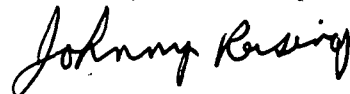
Therefore, enclosed for your approval is DCR Number RI/FS:93:002B which amends the previously approved DCR Number RI/FS:93:002A by clarifying the aforementioned inconsistency. Specifically, the enclosed DCR includes the following two modifications:

1. Table 3-1 has been further revised to delete from the Feasibility Study Report Outline Items 4.3.8 and 4.3.9, which incorrectly identify state and community acceptance respectively as comparative analysis criteria. Accordingly, Item 4.3.10 has been renumbered to be Item 4.3.8.
2. The text of Section 3.7 has been modified to delete the phrase, "...including the identification of a 'preferred remedial action alternative'..."

0001

If you or your staff should have any questions with regard to this matter, please contact Randi Allen at (513) 648-3102.

Sincerely,

for 
for Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Allen

Enclosure: As Stated

cc w/enc:

K. A. Chaney, EM-424, TREV
D. R. Kozlowski, EM-424 TREV
G. Jablonowski, USEPA-V, AT-18J
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K. L. Alkema, FERMCO
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AR Coordinator, FERMCO

cc w/o enc:

R. L. Glenn, Parsons
J. W. Thiesing, FERMCO/2

**FEMP SCO
DOCUMENT CHANGE REQUEST**

4834
REQUEST #: RI/FS:93:002B

Issue Date: October 1, 1993

Page 1 of 5

This form is used to initiate permanent change to controlled distribution project-specific procedures.

Do not write in this block

REQUESTOR: FERMCO - Dennis J. Carr PHONE #: (513) 738-0003 REQUESTED DATE: October 1, 1993

DCR TITLE: MODIFICATION TO FS WORK PLAN - ADOPTION OF EPA COMPARATIVE ANALYSIS GUIDANCE
SECTION/PAGE #: 3.6 / p.16 REV. DATE: November 01, 1990

CHANGE JUSTIFICATION: Approved FS Work Plan presents a departure from EPA RI/FS guidance (OSWER Directive 9355.3-01, October, 1988). Change Request proposed to modify the FS Work Plan to adopt EPA guidance regarding the Comparative Analysis of Alternatives. This is a revision to DCR # RI/FS:93-002A to incorporate EPA comments.

CONTENT OF CHANGE: Approved FS Work Plan departs from EPA guidance in the following areas: 1.) Employs a Analytical Hierarchy Process to derive weighting factors to be applied to the five balancing criteria during the comparative analysis phase; and 2.) Specifies that the FS Report should identify a preferred alternative. Guidance for conducting RI/FS under CERCLA (USEPA, Oct., 1988) identifies that: 1.) Comparative analysis be completed through the use of summary tables and text so as to document the relative strengths and weaknesses of each alternative, highlight the differences among alternatives (using quantitative data where available), and discuss the affects of the key uncertainties on this analysis; and 2.) The preferred alternative be identified post-RI/FS and documented in the proposed plan. This change request adopts USEPA guidance for the conduct of the FEMP operable unit FS Reports.

IMPLEMENTATION DATE: Submittal of draft FS Report for each operable unit.

☐ EFFECTIVE DATE: _____

☐ OTHER: _____

REQUIRED APPROVALS:

<u>N/A</u>		<u>OTHERS AS REQUIRED</u>	
FEMP PROGRAM/PROJECT MGR - ASI	DATE		DATE
<u>N/A</u>			
QA OFFICER - ASI	DATE		
<u>N/A</u>		<u>OTHERS AS REQUIRED</u>	
FEMP PROGRAM/PROJECT MGR - PARSONS	DATE		DATE
<u>N/A</u>			
QA OFFICER - PARSONS	DATE		
<u>N/A</u>		<u>DOE</u>	
FEMP PROGRAM/PROJECT MGR - FERMCO	DATE		DATE
<u>10/1/93</u>			
QA OFFICER - FERMCO	DATE		

TO BE COMPLETED BY DOE

A. Prior EPA notification required?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
B. Prior EPA approval required?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
C. Immediate Implementation?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

DOE FO

DATE

0003

PLEASE DELETE THE BELOW STRIKED-OUT TEXT AND
REPLACE WITH THE INSERT AT THE BOTTOM OF THIS DOCUMENT.

~~3.6 TASK 14 EVALUATION AND SELECTION OF PREFERRED ALTERNATIVES~~

~~This task will consist of alternatives based on the detailed analysis of each alternative with respect to the nine specific criteria. The state and community acceptance criteria are typically accounted for in the alternative selection process; however, the full incorporation of state and community concerns and acceptance is best addressed as part of the Responsiveness Summary for the Record of Decision, following the public comment period on the Proposed Plan. The advantages and disadvantages of each alternative relative to other alternatives will be identified and summarized. The summary will include documentation of relative strengths and weaknesses of each alternative, effects of variations in key uncertainties, and key differences (qualitative and/or quantitative) among alternatives. This analysis will be used as a basis to evaluate the tradeoffs among alternatives. The results of this evaluation will be used to identify the "preferred alternative" for remediation of each operable unit at the FMPC site, subject to the concurrence and approval of the U.S. EPA.~~

~~A key element in both the Detailed Evaluation of Alternatives and the Evaluation and Selection of the Preferred Alternative in Task 14 is the determination of cost effectiveness. A working definition of cost effectiveness is that, if the incremental costs and incremental benefits become highly disproportionate, then the more costly alternative can be eliminated from further consideration. While cost is a quantifiable criterion, a major area of potential criticism for any decision based on this definition is the qualitative, subjective method typically used to rank the effectiveness, implementability, and toxicity/mobility/volume reduction criteria.~~

~~In order to achieve some level of quantification for the latter four criteria, thereby allowing the development of an "effectiveness score" to compare against a "cost score," DOE will incorporate an analytic hierarchy methodology into Task 14. Not only will resultant quantification of the cost effectiveness evaluation provide clarity for justifying the alternative selection, but the application of a uniform methodology across operable units will ensure consistency in the selection of the most appropriate remedial alternative for each operable unit.~~

~~The method to be applied to the alternative selection process is a modification of the Analytical Hierarchy Process (AHP) developed by Saaty (1980). The AHP has been successfully implemented on several Oak Ridge National Laboratory waste cleanup projects (Richter Peak, 1987) and a number of other projects (Golden et al., 1990). A major advantage of the AHP is that it allows for both quantitative input (e.g., chemical and radionuclide concentrations) and qualitative judgment (i.e., professional judgment on the implementability of a remedial action). Application of the AHP will involve four major steps:~~

- ~~1. Develop a hierarchy of criteria to be used to select a remedial alternative.~~
- ~~2. Determine weighting factors for each criterion.~~
- ~~3. Compile information needed to evaluate remedial alternatives with respect to each other and to the criteria.~~
- ~~4. Synthesis input data using AHP to identify the remedial alternative with the most favorable overall ranking.~~

~~Consistent with CERCLA requirements, the criteria mentioned in Step 1 have been defined to be short term effectiveness, long term effectiveness and permanence, implementability, and the reduction of toxicity, mobility, or volume through treatment.~~

~~Step 2 will require that weighting factors be assigned to each criterion to indicate the relative importance of each criterion in the decision process. Using the AHP, quantitative weights will be assigned to the criteria by knowledgeable engineers and scientists with direct, applicable CERCLA experience. In accordance with the NCP [Section 300.430(f)(1)(ii)(E)], the weighting factors will emphasize long term effectiveness and permanence and reduction in toxicity, mobility, or volume through treatment. The criteria will be considered one pair at a time so that only two criteria are being considered simultaneously. A scale of 1 to 9 will be used for the pair wise comparisons, as follows:~~

<u>Rating</u>	<u>Description</u>
1	A and B "are equally important"
3	A is "weakly more important than" B
5	A is "strongly more important than" B
7	A is "demonstrably more important than" B
9	A is "absolutely more important than" B

~~A variety of experienced professionals involved in the RI/FS process will be used to assign the rating values to the four criteria. The use of a large number of individuals will reduce the effect that biased perspectives might play in the determination of weighting factors.~~

~~Step 3 will be performed by individual operable unit FS teams at this level of the evaluation since detailed, operable unit specific data will be required. All of the alternatives will be compared to each other simultaneously rather than pair wise. It will be possible to rank alternatives on a qualitative basis or on a quantitative basis, incorporating a variety of input data to describe each alternative. This analysis will consider the preference for treatment as a principal element and the bias against off site land disposal of untreated waste as stated in the NCP [Section 300.430(f)(ii)(E)].~~

~~Step 4 will use AHP to perform the necessary numerical operations on: 1.) The previously developed hierarchy of criteria; 2.) the previously determined weighting factors for the criteria; and 3.) the qualitative or quantitative data that describe each remedial alternative. The result is a numerical "effectiveness score" that provides a relative quantitative ranking of the alternatives.~~

REPLACE THE ABOVE TEXT WITH THE INSERT BELOW

3.6 TASK 14 - COMPARATIVE ANALYSIS

Following completion of the detailed analysis of the remedial alternatives against the criteria, a comparative analysis will be conducted to evaluate the relative performance of each alternative in relation to each specific evaluation criterion. The purpose of this comparative analysis will be to identify the advantages and disadvantages of each alternative relative to one another, so that the key tradeoffs the decisionmakers must balance can be identified.

Overall protection of human health and the environment and compliance with ARARs will generally serve as threshold determinations in that they must be met by any alternative in order for it to be eligible for selection. The next five criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, and volume through treatment; short-term effectiveness; implementability; and cost) will generally require the most discussion because the major tradeoffs among alternatives will most frequently relate to one or more of these five.

State and community acceptance will be addressed in the ROD once formal comments on the RI/FS report and the proposed plan have been received and a final remedy selection decision is being made. Therefore, these modifying criteria will not be addressed during comparative analysis.

The comparative analysis portion of each FS report will include a narrative discussion describing the strengths and weaknesses of the alternatives relative to one another with respect to each criterion, and how reasonable variations of key uncertainties could change the expectations of their relative performance. If innovative technologies are being considered, their potential advantages in cost or performance and the degree of uncertainty in their expected performance (as compared with more demonstrated technologies) will also be discussed to the extent practical.

The presentation of differences among alternatives can be measured either qualitatively or quantitatively as appropriate, and will identify substantive differences (e.g., greater short-term effectiveness concerns, greater cost, etc.). Quantitative information that was used to assess the alternatives (e.g., specific cost estimates, time until response objectives would be obtained, and levels of residual contamination) will be included in these discussions to the extent practical.

**PLEASE DELETE THE BELOW STRIKED TEXT FROM SECTION 3.7
TASK 15 DRAFT FEASIBILITY STUDY REPORT**

3.7 TASK 15 - DRAFT FEASIBILITY STUDY REPORT

A draft FS report presenting the methods and results of Tasks 11 and 14, ~~including the identification of a "preferred remedial action alternative,"~~ will be prepared.

**PLEASE DELETE "SECTION 5.0 - IDENTIFICATION OF PREFERRED
REMEDIAL ACTION ALTERNATIVE" OF TABLE 3-1 ON PAGE 22 OF 22**

TABLE 3-1
(Continued)

- 4.2.1.2 Assessment (continued)
 - Cost
 - State Acceptance
 - Community Acceptance
 - Environmental Impacts (NEPA)

4.2.2 Alternative 2

4.2.2.1 Description

4.2.2.2 Assessment

4.2.3 Alternative 3

4.3 COMPARATIVE ANALYSIS

4.3.1 Overall Protection

4.3.2 Compliance with ARARs

4.3.3 Long-Term Effectiveness and Permanence

4.3.4 Reduction of Toxicity, Mobility, or Volume

4.3.5 Short-Term Effectiveness

4.3.6 Implementability

4.3.7 Cost

4.3.8-- State Acceptance--

4.3.9-- Community Acceptance--

4.3.8/4.3.9-- Summary of NEPA Compliance Analysis

5.0 IDENTIFICATION OF PREFERRED REMEDIAL ACTION ALTERNATIVE

BIBLIOGRAPHY

APPENDICES

0008



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

6-4971
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JUL 28 1993

REPLY TO THE ATTENTION OF:

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: Approval of the OU 4
Feasibility Study Document
Change Request

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the Operable Unit (OU) 4 Document Change Request (DCR) for the Feasibility Study Work Plan. This DCR will amend the existing Work Plan to allow for a qualitative comparison of alternatives of each OU. This methodology will replace the existing analytical process and will be more consistent with U.S. EPA guidance.

U.S. EPA hereby approves the DCR, however one inconsistency exists. The text states that state and community acceptance will be addressed in the record of decision, but Table 3-1, still includes sections for state and community acceptance. This inconsistency must be clarified.

Please contact me at (312) 886-0992 if you have any

Sincerely,

James A. Saric
Remedial Project Manager

Referenced letter

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Nick Kauffman, FERMCO
Jim Theising, FERMCO
Paul Clay, FERMCO

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